



United States Department of Agriculture
Forest Service

Thunder Basin National Grassland 2020 Plan Amendment

Draft Biological Assessment

Thunder Basin National Grassland

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1 INTRODUCTION

This Biological Assessment (BA) presents the analysis and determination of effects of all alternatives developed (Alternatives 1, 2, 3 and 4) for the 2020 Thunder Basin Plan Amendment on threatened or endangered species listed under the Federal Endangered Species Act (ESA) or on their designated critical habitat.

In accordance with the ESA and regulatory guidance, all listed and proposed species that may be present in the action area were considered, with the following constraints:

- Only those organisms that appear on the official species list as seen in Table 1, and
- Only those species under the regulatory jurisdiction of the U.S. Fish and Wildlife Service (USFWS) or the National Marine Fisheries Service (NMFS).

This document is prepared in accordance with the requirements of the ESA and its implementing regulations. It is also prepared in accordance with current US Forest Service (USFS) policy following standards established in Forest Service Manual direction (FSM 2670) and the guidance provided in the USFWS Consultation Handbook (U.S. Fish and Wildlife Service and National Marine Fisheries Service 1998). This analysis is based on the best scientific and commercial data available at the time this document was written.

Species Considered for Analysis

Table 1 describes the listing status for each species, habitat presence in the project area, and whether the species would be carried forward for analysis. Federally listed species addressed in this report are from the most recent list received from the U.S. Fish and Wildlife Service (U.S. Fish and Wildlife Service; June 2019 and September 2019), along with the Region 2 Threatened, Endangered, Proposed and Sensitive (TEPS) Species List.

Those species in Table 1 where the analysis area is outside of the species range or where the species did not occur in the planning unit, were eliminated from further analysis. Those species where habitat was present or the species is known and/or suspected to occur in the planning area were carried forward for analysis.

There is no designated critical habitat for any federally listed species on the Thunder Basin National Grassland.

Table 1. U.S. Fish and Wildlife Service Threatened, Endangered and Proposed Species List for the Thunder Basin National Grassland. Species Concurrence from IPAC: Final data pull September 9th, 2019. Wyoming Ecological Services Field Office, Cheyenne, Wyoming.

Common Name	Status	Recognized on FWS IPAC List for the Thunder Basin?	Recognized on the R2 TEP List?	Known or Suspected To Be Present?	Habitat Present?	Designated Critical Habitat Present Or Could Be Affected?	Rationale to carry forward for analysis or not
Black-footed ferret (<i>Mustela nigripes</i>)	Endangered Experimental Population, Non-essential	No	Yes	No	Yes	No	Species will be carried forward for analysis due to dependency on prairie dogs, even though the species does not occur on the planning unit.
Least tern (<i>Sternula antillarum</i>) Interior pop	Endangered	No	Yes	No	No	No	No analysis needed based on: Analysis area is outside the species' range or the species does not occur on the planning unit and the project does not affect downstream water depletions.
Piping plover (<i>Charadrius melodus</i>) No. Great Plains pop	Endangered	No	Yes	No	No	No	No analysis needed based on: Analysis area is outside the species' range or the species does not occur on the planning unit and the project does not affect downstream water depletions.
Whooping crane (<i>Grus americana</i>)	Endangered	No	Yes	No	No	No	No analysis needed based on: Analysis area is outside the species' range or the species does not occur on the planning unit and the project does not affect downstream water depletions.
Northern long-eared bat (<i>Myotis septentrionalis</i>)	Threatened	Yes	Yes	Yes	Yes	No	Species will be carried forward for analysis due to habitat present in the planning area or is known to occur in the planning area.

2 ENVIRONMENTAL CONSEQUENCES

Black-footed Ferret (*Mustela nigripes*)

Species/Habitat Description

Black-footed ferret (*Mustela nigripes*) is the only species of ferret native to North America (USFWS 2019a). These slender mustelids are distinguished by their black feet, tail tip, and “mask” across their eyes that contrast the yellowish buff to white coloring of their upper bodies and nearly white forehead, muzzle and throat (USFWS 2019b). *Mustela nigripes* are medium-sized, typically weighing between 0.64 to 1.13 kilograms (1.4 to 2.5 lb.) and measuring 48.26 to 61 centimeters (19 to 24 in) in length, including a 12.7 to 15.23 cm (5 to 6 in) tail with males being slightly larger than the females. They also have large front paws, with claws for digging, as well as large ears and eyes (USFWS 2019a).

The *Mustela nigripes* is intrinsically linked to the prairie dog (USFWS 2013, 2019a). They require established prairie dog towns for food and shelter (Hoffmeister 1986), which primarily occur in grassland and sagebrush habitats in Wyoming. Such areas are characteristic of prairie, grassland plains, and surrounding mountain basins up to 3,200 meters (10,500 ft) (USFWS 2019a). All active prairie dog towns or complexes of towns large enough to support ferrets are considered potential *Mustela nigripes* habitat, but other factors such as disease potential may alter the suitability of the habitat for black-footed ferret.

Life History

Mustela nigripes live in prairie dog colonies year-round and are solitary, except during brief periods of the breeding season and when kits are still trailing their mothers. They are strongly nocturnal and spend much of the day below ground, appearing above ground mostly at night. They exhibit a bimodal activity pattern, being most active in the first few hours after sundown (1700-2400) and in the early morning (0300-0600), but can be found above ground any time of night (Clark et al. 1983, Clark 1989, Marinari 1992). Individual *Mustela nigripes* usually do not return to the same burrow every morning, but rather relocate frequently.

Breeding season for the *Mustela nigripes* occurs during March and April, with the female producing four to five young per year in May or June. The young ferrets do not come above ground until they are six weeks old (Adult 1996). The young become increasingly solitary from August through early September, and are self-sufficient from early October.

The size and shape of *Mustela nigripes* home ranges are strongly determined by distribution and density of prairie dogs. This appears to be especially true of females. Male home ranges, while tracking prairie dogs as well, also appear to be positioned to overlap the home ranges of several females. Home range boundaries are typically well-defined and individuals attempt to exclude others of the same gender. Boundaries are delineated by scent-marking, which expresses the individual’s identity, sexual condition, and social status. Males will mark and patrol their home ranges more diligently in February and March as breeding season approaches. This causes them to spend more time and travel greater distances on the surface, making them more vulnerable to predation (Miller et al. 1996). Aggression is rarely observed in the *Mustela nigripes*, suggesting that scent marks are effective signals. Their diet primarily consists of prairie dog (90%), and secondarily of mice, rabbits, birds, reptiles, and insects (10%) (Andelt 1996). The species is opportunistic and will feed on carrion. *Mustela nigripes* require a large amount of food due to a high metabolism. Hunting takes place at night, although females with young may hunt during the day.

Threats

Threats to the species include habitat loss and fragmentation, sylvatic plague, genetic drift, canine distemper, deliberate poisoning, and shootings (Esch et. al. 2005).

Distribution

Currently, free-ranging *Mustela nigripes* occur only in eight reintroduction sites established by the USDI Fish and Wildlife Service since 1991: Shirley Basin (Wyoming), Meeteetse (Wyoming); Badlands National Park/ Conata Basin/ Buffalo Gap National Grassland (South Dakota); Charles M. Russell National Wildlife Refuge/ neighboring lands (Montana); Fort Belknap Indian Reservation (Montana); Aubrey Valley (Arizona); Cheyenne River Sioux Tribal lands (South Dakota); Coyote Basin (Colorado/ Utah); and Janos (Chihuahua, Mexico) (USDI Fish and Wildlife Service 2002).

Existing Condition

Black-footed ferrets are not known or expected to inhabit the Thunder Basin National Grassland. Neither wild ferrets, nor any individuals from a non-essential experimental population are present. No critical habitat is designated. As of 2017, 2 populations of ferrets have been re-established in Wyoming: the Shirley Basin/Medicine Bow Reintroduction Site and the Meeteetse Reintroduction Site. Both of these populations contribute toward the recommendations and state-specific population targets for Wyoming set forth by the Service in the 2013 Recovery Plan (USFWS 2013, WGFD 2018). In addition, site-specific management plans have been created outlining the Department's strategies and goals specific to each reintroduction site (WGFD 1991, 2016). Neither of these sites is within or adjacent to the project area, and the protected status of those black-footed ferrets is considered as non-essential experimental populations.

The black-footed ferret was listed as endangered in 1967 under a precursor to the Endangered Species Act of 1973 (32 FR 4001, March 1967). On March 6, 2013, the U.S. Fish and Wildlife Service (Service) issued a letter acknowledging 'block clearance' for the State of Wyoming in response to a request from the Wyoming Game and Fish Department (USFWS 2019a). This letter provides acknowledgement that the likelihood of identifying wild ferrets in Wyoming, outside of those resulting from reintroductions, is distinctly minimal. The letter also concludes that it is unlikely that black-footed ferret populations in Wyoming have persisted through drastic reductions of prairie dog (*Cynomys spp.*) populations, and further points out that the black-footed ferret populations have not rebounded as prairie dog populations have begun to expand again.

In 2015, the Service proposed to designate all of the State of Wyoming as a special area for the re-establishment of black-footed ferret populations under section 10(j) of the ESA. This designation provides the greatest flexibility to manage black-footed ferrets while addressing landowner concerns regarding ESA regulations. The goal of this proposed action was to help facilitate new reintroductions of this endangered species.

The "10 J Rule" became final in October of 2015 (USFWS 2019a). The Service, in coordination with the State of Wyoming and other partners, committed to reestablishing additional populations of the black-footed ferret into prairie dog occupied habitat in Wyoming and classify any reestablished population as a nonessential experimental population (NEP) under section 10(j). This final rule establishes the NEP area and provides for allowable legal incidental taking of the black-footed ferret within the defined NEP area.

The best available data indicate the reintroduction of black-footed ferrets to Wyoming is biologically feasible and will promote conservation and recovery of the species. This NEP area and two previously

designated NEPs in Wyoming collectively cover the entire state and provide consistent management flexibility state-wide.

As part of the final 10(j) rule, the Service also passed leadership of ferret reintroduction to the Wyoming Game and Fish Department. The Wyoming Game and Fish Department developed a black-footed ferret management plan based on the U.S. Fish and Wildlife Service black-footed ferret recovery plan, which includes the following delisting population objectives for Wyoming (USFWS 2013):

1. Maintain a minimum of 341 breeding adults distributed among 5 or more populations statewide
2. Maintain a minimum of 30 breeding adults in each population, with at least 2 populations containing a minimum of 100 breeding adults
3. Establish at least 2 populations within white-tailed prairie dog colonies AND at least 1 population within black-tailed prairie dog colonies, with remaining populations distributed among colonies of either prairie dog species

Both the black-footed ferret recovery plan and the Wyoming black-footed ferret management plan estimate 70,000 acres of prairie dog colonies will be needed in black-tailed prairie dog and white-tailed prairie dog habitat across the state to meet Wyoming's portion of the range-wide habitat goal for black-footed ferret delisting. The black-tailed prairie dog occurs on the Thunder Basin National Grassland, however the white-tailed prairie dog does not and its range lies west of the grassland. According to the 10(j) rule, a minimum of 1,500 acres of black-tailed prairie dog colonies is required for a reintroduction site (80 FR 66824); the recovery plan also states approximately 4,500 acres of colonies are expected to be necessary to support at least 30 breeding adult ferrets and more than 15,000 acres are likely needed to support at least 100 ferrets (USFWS 2013).

In regard to species recovery, recovery plans are not regulatory documents, but are instead intended to provide guidance to the Service, other federal agencies, States, tribes and other partners on methods of minimizing threats to listed species and on criteria that may be used to determine when recovery is achieved. The recovery of a species may be achieved without all criteria being fully met. The proposed Thunder Basin National Grassland 2020 Plan Amendment was developed intentionally to provide plan components that could create ecological conditions necessary for the reintroduction of black-footed ferrets. In addition, the purpose and need of the proposed plan amendment includes the following statements regarding improvement of the social context for the reintroduction of black-footed ferret:

- Purpose: Support ecological conditions that do not preclude reintroduction of the black-footed ferret.
- Need: Revise management direction in Management Area 3.63 – Black-Footed Ferret Reintroduction Habitat. .

Environmental Consequences

Direct, Indirect and Cumulative Effects of All Alternatives on the Black-footed Ferret

All alternatives are expected to have *No Effect* on black-footed ferret. See Table 2 for elements of each alternative with respect to the effects on black-footed ferret.

All alternatives provide the conditions for the potential reintroduction of black-footed ferret. Under any of these alternatives, the elements of the alternatives do not preclude the reintroduction of ferrets should the species be considered for reintroduction on the Thunder Basin National Grassland. All

alternatives meet the minimum 1,500 acre requirement for a reintroduction site. Where the alternatives differ is in prairie dog colony acre target and range and distribution, density control, boundary management, rodenticide use, anticoagulant use and shooting restrictions. See Table 2 and Table 6 for more information.

The effects determination only addresses changes in management that would occur from the Amendment. Consultation regarding existing management conditions that would not be changed as a result of the Amendment has occurred prior using agency-approved methods, and these management conditions are not analyzed in this document.

Proposed actions included in the alternatives, such as reductions in management area size, reductions in the total extent of prairie dog colonies, changes in the distribution or size of prairie dog colonies, changes in the availability of lethal prairie dog control tools, and changes in opportunities for recreational shooting, would have No Effect on black-footed ferret because only experimental populations of black footed ferret exist in the state of Wyoming, proposed actions would not affect extirpated endangered black footed ferret (USFWS 2013).

Cumulative impacts include the incremental impacts of future State, or private activities (i.e., excluding federal activities), that are reasonably certain to occur within the action area of the Federal action subject to consultation.

Existing and proposed activities on non-federal lands in the planning area that have the potential to cumulatively affect the species include but are not limited to the following:

- Non-Federal oil and gas and related energy development
- Water depletions from irrigation diversions and dams
- Livestock grazing on private lands
- Existing and proposed wind farms
- Subdivision development
- Recreation
- Coal mine operations
- Transmission lines
- Seismic exploration
- Municipal dump expansions
- Use of anticoagulant rodenticides

Determination of Effects

Black-footed ferrets are not known or expected to inhabit the Thunder Basin National Grassland. Neither wild ferrets, nor any individuals from a non-essential experimental population are present. In addition, no critical habitat is designated. Implementation of the Amendment would not change any potential effects to the black-footed ferret that may result from current or projected future non-Federal actions. Because it has been determined by the USFWS (USFWS 2013), the likelihood of identifying wild ferrets in Wyoming, outside of those resulting from reintroductions is minimal, implementation of the Thunder Basin National Grassland 2020 Plan Amendment, would have *No Effect* on the extirpated, non-experimental populations of black-footed, with consideration of direct, indirect and cumulative effects combined. Similarly, the amendment will not jeopardize the nonessential experimental population considering that no animals are known or expected to be present. All alternatives have been designed to provide adequate black-tailed prairie dog colonies and other features that do not preclude reintroduction.

Table 2. Components of the alternatives and the effects on black-footed ferret.

Alternative	Components	Elements of the WGFD Prioritization Matrix for potential reintroduction applicable to the plan amendment alternatives	Effects
<p>Alternative 1</p> <p>No Action</p>	<p>Management Area 3.63 – Black-Footed Ferret Reintroduction Habitat is approximately 51,000 acres in size</p> <p>Prairie dog colonies and targets managed based on 2015 management strategy categories:</p> <ul style="list-style-type: none"> • Category 1: 18,000 acres • Category 2: 9,000 acres • Category 3: 6,000 acres <p>No rodenticide use for density control in Category areas when targets are not met.</p> <p>No anticoagulant use.</p> <p>Year-round recreational shooting prohibition in management area 3.63 and category 1; conditional restrictions in category 2 areas.</p>	<p><i>R1-Minimum Prairie Dog Acreage:</i> Meets the minimum requirement (1,500 active acres of black-tailed prairie dogs) for a site to be considered for reintroduction of ferrets.</p> <p><i>R2-Capacity to Fulfill Allocation of Ferrets:</i> To be determined based on availability of captive ferrets, then prioritized based on cranking criteria.</p> <p><i>R3-Support of Landowners Within Reintroduction Site:</i> One purpose of the plan amendment is to reduce resource conflicts related to prairie dog occupancy and livestock grazing. Current conditions do not indicate local landowner support.</p> <p><i>R4: Resources in Place to Conduct Boundary Control Efforts:</i> No boundary management zones, and boundary control has not been effective during population expansions.</p> <p><i>R5- Community Support:</i> One purpose of the plan amendment is to reduce resource conflicts related to prairie dog occupancy and livestock grazing. Current conditions do not indicate community support.</p> <p><i>R6-Compatible Land Management Practices:</i> Other land management practices are compatible with reintroduction.</p>	<p>No Effect – The species does not occur on the Thunder Basin National Grassland at this time. Because only experimental populations of black-footed ferret exist in the state of Wyoming, actions would not affect extirpated endangered black-footed ferret.</p> <p>Lack of a boundary management zone and effective boundary control would likely preclude the reintroduction of ferrets should the species be considered for reintroduction on the Thunder Basin National Grassland.</p>
<p>Alternative 2</p> <p>Proposed Action</p>	<p>Management Area 3.63 – Black-Footed Ferret Reintroduction Habitat would be changed to Management Area 3.67 – Rangelands with Short-Stature Vegetation Emphasis. Management area size would change from approximately 51,000 to approximately 35,000 acres.</p>	<p><i>R1-Minimum Prairie Dog Acreage:</i> Meets the minimum requirement (1,500 active acres of black-tailed prairie dogs) for a site to be considered for reintroduction of ferrets.</p>	<p>No Effect – The species does not occur on the Thunder Basin National Grassland at this time. Because only experimental populations of black-footed ferret exist in the</p>

Alternative	Components	Elements of the WGFD Prioritization Matrix for potential reintroduction applicable to the plan amendment alternatives	Effects
	<p>Prairie dog colonies would be managed toward a target of 10,000 acres within 3.67.</p> <p>No complexes would be required or designated in standards or guidelines, but desired conditions for MA 3.67 would describe that within MA 3.67, colonies within approximately 4.5 miles (7km) of other colonies are maintained, when possible, to develop colony complexes.</p> <p>If the District ranger determines that lethal control in MA 3.67 is warranted, and colony acres are below 7,500 acre, satellite acres can be identified. Rodenticide use is allowed in interior of 3.67 if the sum of acres in MA 3.67 and satellite colonies is at least 7,500 acres.</p> <p>To mitigate prairie dog colony expansion during drought conditions, control tools may be used in active prairie dog colonies to work toward a revised target of 7,500 acres in 3.67 and satellite colonies combined.</p> <p>When below 7,500 acres in 3.67 and satellite colonies, treat no more than 50% of any colony.</p> <p>No anticoagulant use.</p> <p>Seasonal recreational shooting restriction (no recreational shooting February 1 to August 15) in management area 3.67, including the boundary management zone and any designated satellite acres. No shooting restrictions on rest of grassland.</p>	<p><i>R2-Capacity to Fulfill Allocation of Ferrets:</i> To be determined based on availability of captive ferrets, then prioritized based on cranking criteria.</p> <p><i>R3-Support of Landowners Within Reintroduction Site:</i> To be determined following implementation of the plan amendment. The proposed action was designed to address concerns from local landowners.</p> <p><i>R4: Resources in Place to Conduct Boundary Control Efforts:</i> Boundary management zones would be established and resources would be allocated to control efforts.</p> <p><i>R5- Community Support:</i> To be determined following implementation of the plan amendment. The proposed action was designed in part to improve community support.</p> <p><i>R6-Compatible Land Management Practices:</i> Other land management practices are compatible with reintroduction.</p>	<p>state of Wyoming, actions would not affect extirpated endangered black-footed ferret.</p> <p>The elements of this alternative do not preclude the reintroduction of ferrets should the species be considered for reintroduction on the Thunder Basin National Grassland.</p>
<p>Alternative 3</p> <p>Grassland-wide</p>	<p>Management Area 3.63 – Black-Footed Ferret Reintroduction Habitat would be changed to Management Area 3.67 – Rangelands with Short-Stature Vegetation Emphasis. Management area size would change from approximately 51,000 to approximately 29,000 acres.</p>	<p><i>R1-Minimum Prairie Dog Acreage:</i> Meets the minimum requirement (1,500 active acres of black-tailed prairie dogs) for a site to be considered for reintroduction of ferrets.</p> <p><i>R2-Capacity to Fulfill Allocation of Ferrets:</i> To be determined based on availability of captive ferrets,</p>	<p>No Effect – The species does not occur on the Thunder Basin National Grassland at this time. Because only experimental populations of black-footed ferret exist in the state of Wyoming, actions would not affect extirpated</p>

Alternative	Components	Elements of the WGFD Prioritization Matrix for potential reintroduction applicable to the plan amendment alternatives	Effects
	<p>Prairie dog colonies across the grassland would be managed within a range of 10,000-15,000 acres. Colonies located anywhere on grassland except in the boundary management zone would count toward acre range.</p> <p>One 1,500 acre complex would be required and managed for in MA 3.67,</p> <p>When acreage is below 10,000 acres grassland-wide, rodenticide use only allowed in BMZ or for density control.</p> <p>To mitigate prairie dog colony expansion during drought conditions, control tools may be used in active prairie dog colonies to work toward a target of 10,000 acres.</p> <p>When below 10,000 acres, treat no more than 50% of any colony.</p> <p>Anticoagulant use proposed.</p> <p>No shooting restrictions.</p>	<p>then prioritized based on ranking criteria. Use of anticoagulants in the boundary management zone would make the site a low priority for allocation of ferrets.</p> <p><i>R3-Support of Landowners Within Reintroduction Site:</i> To be determined following implementation of the plan amendment. The grassland-wide alternative was designed in part to reduce impacts to any given individual permittee, and thus, could improve support of local landowners.</p> <p><i>R4: Resources in Place to Conduct Boundary Control Efforts:</i> Boundary management zones would be established and resources would be allocated to control efforts.</p> <p><i>R5- Community Support:</i> To be determined following implementation of the plan amendment. The grassland-wide alternative was designed in part to reduce impacts to any given individual permittee, and thus, could improve community support.</p> <p><i>R6-Compatible Land Management Practices:</i> Other land management practices are compatible with reintroduction.</p>	<p>endangered black-footed ferret.</p> <p>The elements of this alternative do not preclude the reintroduction of ferrets should the species be considered for reintroduction on the Thunder Basin National Grassland, but use of anticoagulants in the boundary management zone would make the site a low priority for allocation of ferrets.</p>
<p>Alternative 4</p> <p>Prairie Dog Emphasis</p>	<p>Management Area 3.63 – Black-Footed Ferret Reintroduction Habitat would be changed to Management Area 3.67 – Prairie Dog Emphasis Area. Management Area 3.67 and would remain as current acres.</p> <p>Prairie dog colonies and targets managed based on 2015 management strategy categories:</p>	<p><i>R1-Minimum Prairie Dog Acreage:</i> Meets the minimum requirement (1,500 active acres of black-tailed prairie dogs) for a site to be considered for reintroduction of ferrets.</p> <p><i>R2-Capacity to Fulfill Allocation of Ferrets:</i> To be determined based on availability of captive ferrets, then prioritized based on ranking criteria.</p>	<p>No Effect – The species does not occur on the Thunder Basin National Grassland at this time. Because only experimental populations of black-footed ferret exist in the state of Wyoming, actions would not affect extirpated</p>

Alternative	Components	Elements of the WGFD Prioritization Matrix for potential reintroduction applicable to the plan amendment alternatives	Effects
	<ul style="list-style-type: none"> • Category 1 would remain the same with 18,000 acre target. • Category 2 areas would be modified to remove Highway 450 and Miller Hills areas and add a Spring Creek area, with a 9,000 acre total target. • Category 3 targets would be removed. <p>MA 3.67 would be managed for two 4,500 acre complexes.</p> <p>Unlike the current strategy, when target acres are met, by category, lethal control would be allowed within that category to return to target.</p> <p>No specific management changes under drought conditions.</p> <p>No rodenticide use for density control when targets are not met in Category areas.</p> <p>No anticoagulant use.</p> <p>Year-round recreational shooting prohibition in management area 3.67 and category 1. Year-round prohibition in category 2 until acre target met, then seasonal restrictions (no shooting February 1 to August 15) in category 2. No shooting restrictions on rest of grassland.</p>	<p><i>R3-Support of Landowners Within Reintroduction Site:</i> To be determined following implementation of the plan amendment. The prairie dog emphasis alternative was designed to address concerns from local landowners.</p> <p><i>R4: Resources in Place to Conduct Boundary Control Efforts:</i> Boundary management zones would be established and resources would be allocated to control efforts.</p> <p><i>R5- Community Support:</i> To be determined following implementation of the plan amendment. The prairie dog emphasis alternative was designed in part to improve community support.</p> <p><i>R6-Compatible Land Management Practices:</i> Other land management practices are compatible with reintroduction.</p>	<p>endangered black-footed ferret.</p> <p>The elements of this alternative do not preclude the reintroduction of ferrets should the species be considered for reintroduction on the Thunder Basin National Grassland.</p>

Northern long-eared Bat (*Myotis septentrionalis*)

Species/Habitat Description

A medium-sized bat species, the northern long-eared bat adult body weight averages 5 to 8 g, with females tending to be slightly larger than males. Fur is medium to dark brown on its back, dark brown, but not black, ears and wing membranes, and tawny to pale-brown fur on the ventral side. The northern long-eared bat is distinguished from other *Myotis* species by its long ears (average 17 mm (0.7 in)) that, when laid forward, extend beyond the nose but less than 5 mm (0.2 in) beyond the muzzle. The tragus is long, pointed, and symmetrical. Within its range, the northern long-eared bat can be confused with the little brown bat (*Myotis lucifugus*) or the western long-eared myotis (*Myotis evotis*).

Northern long-eared bats forage primarily in coniferous or deciduous forests. They are short-distance migrants, the distance between summer habitat and the hibernaculum typically being 56 km (35 mi) (Hester and Grenier 2005) to 89 km (55 mi) (USFWS 2014) or less.

Northern long-eared bats predominantly overwinter in hibernacula that include caves and abandoned mines. Hibernacula used by northern long-eared bats are typically large, with large passages and entrances, relatively constant, cooler temperatures, and with high humidity and no air currents. They are typically found roosting in small crevices or cracks in cave or mine walls or ceilings, often with only the nose and ears visible, thus are easily overlooked during surveys. To a lesser extent, northern long-eared bats have been found overwintering in other types of habitat including abandoned railroad tunnels, more frequently in the northeast portion of the range.

During the summer, northern long-eared bats typically roost singly or in colonies underneath bark or in cavities or crevices of both live trees and snags. Males and non-reproductive females' summer roost sites may also include cooler locations, including caves and mines. Northern long-eared bats have also been observed roosting in colonies in human made structures, such as buildings, barns, park pavilions, sheds, cabins, under eaves of buildings, behind window shutters, and in bat houses. Northern long-eared bats most likely are not dependent on a certain species of trees for roosts throughout their range; rather, certain tree species will form suitable cavities or retain bark and the bats will use them opportunistically. Structural complexity of habitat or available roosting resources may be more important factors. The species appears to favor areas with greater canopy cover, and often roosts below the canopy, but higher on slopes. Northern long-eared bats switch roosts often, typically every 2-3 days. Bats switch roosts for a variety of reasons, including, temperature, precipitation, predation, parasitism, and ephemeral roost sites.

Life History

Northern long-eared bats hibernate during the winter months to conserve energy from increased thermoregulatory demands and reduced food resources. In general, northern long-eared bats arrive at hibernacula in August or September, enter hibernation in October and November, and leave the hibernacula in March or April. In the Black Hills northern long-eared bats typically enter hibernacula by October 1 and depart before May 15 (Reeves pers. Comm). Northern long-eared bats have shown a high degree of philopatry (using the same site multiple years) for a hibernaculum, although they may not return to the same hibernaculum in successive seasons.

Typically, northern long-eared bats are not abundant and compose a small proportion of the total number of bats hibernating in a hibernaculum. Although usually found in small numbers, the species typically inhabits the same hibernacula with large numbers of other bat species, and occasionally are found in clusters with these other bat species. Other species that commonly occupy the same habitat include: little brown bat, big brown bat, eastern small-footed bat, tri-colored bat, and Indiana bat.

Northern long-eared bats exhibit significant weight loss during hibernation. The northern long-eared bat is not considered a long-distance migratory species; short migratory movements between summer roost and winter hibernacula have been documented. Movements from hibernacula to summer colonies may be further. Several studies show a strong homing ability of northern long-eared bats in terms of return rates to a specific hibernaculum, although bats may not return to the same hibernaculum in successive winters.

Breeding occurs from late July in northern regions to early October in southern regions and commences when males begin to swarm hibernacula and initiate copulation activity. Hibernating females store sperm until spring, exhibiting a delayed fertilization strategy. Ovulation takes place at the time of emergence from the hibernaculum, followed by fertilization of a single egg, resulting in a single embryo; gestation is approximately 60 days. Maternity colonies, consisting of females and young, are generally small, numbering from about 30 to 60 individuals. Adult females give birth to a single pup typically in late May or early June, but may occur as late as July. Juveniles typically start flying at 21 days. Adult longevity is estimated to be up to 18.5 years.

The northern long-eared bat has a diverse diet including moths, flies, leafhoppers, caddisflies, and beetles, with diet composition differing geographically and seasonally. Foraging techniques include hawking (catching insects in flight) and gleaning in conjunction with passive acoustic cues. Emerging at dusk, most hunting occurs above the understory, but under the canopy on forested hillsides and ridges, rather than along riparian areas. This coincides with data indicating that mature forests are an important habitat type for foraging.

Threats

It was determined that the northern long-eared bat is in danger of extinction, predominantly due to the threat of white nose syndrome. White nose syndrome is a disease caused by the cold-loving fungus, *Pseudogymnoascus (Geomyces) destructans*. First observed in New York in 2006, white nose syndrome has spread rapidly across the Northeast and into the Midwest and Southeast. Throughout the range of white nose syndrome, up to 99 percent of infected bats die from the disease. Although there is uncertainty about the spread of white nose syndrome, experts agree that the fungus will likely spread throughout the United States (USFWS 2013).

The northern long-eared bat is also threatened by the loss and degradation of summer habitat caused by human development, and by collision with or barotrauma (injury to the lungs due to a change in air pressure) caused by wind turbines. Mine closures and vandalism of winter roosts and hibernacula also pose threats to this species (USFWS 2013). These additional threats (the present or threatened destruction, modification, or curtailment of its habitat or range; overutilization for commercial, recreational, scientific, or educational purposes; and other natural or manmade factors affecting its continued existence) when combined with white nose syndrome heighten the level of risk to the species (USFWS 2013).

Distribution

The northern long-eared bat ranges across much of the eastern and north central United States, and all Canadian provinces west to the southern Yukon Territory and eastern British Columbia. In the United States, the species' range reaches from Maine west to Montana, south to eastern Kansas, eastern Oklahoma, Arkansas, and east to the Florida panhandle. Throughout the majority of the species' range it is patchily distributed, and historically was less common in the southern and western portions of the range than in the northern portion of the range. Although they are typically found in low numbers in inconspicuous roosts, most records of northern long-eared bats are from winter hibernacula surveys. Wyoming has no known hibernacula (likely due to lack of survey effort, suitability of habitat, and extent

of range) (Hester and Grenier 2005). The United States portion of the northern long-eared bat's range can be described in four parts: the eastern population, Midwestern population, the southern population, and the western population. Historically, the northern long-eared bat was most abundant in the eastern portion of its range.

The northern long-eared bat is generally less common in the western portion of its range and it is considered common in only small portions of the western range (e.g., Black Hills) and uncommon or rare in the western extremes of the range (e.g., Wyoming, Kansas, Nebraska). The northern long-eared bat is considered abundant in the Black Hills having been observed hibernating and during the summer.

The Northern long-eared bat does occur on the Thunder Basin Grassland and habitat is present.

Environmental Consequences

Direct, Indirect and Cumulative Effects of All Alternatives on the Northern Long-eared Bat

The effects determination addresses changes in management that would occur from the alternatives (Alternatives 1, 2, 3 and 4) developed for the 2020 Thunder Basin Grassland Plan Amendment.

Proposed actions included in the alternatives, such as reduction in management area size, use of rodenticides, and plague management would have *No Effect* on northern long-eared bat because none of these actions would occur in northern long-eared bat habitat. Northern long-eared bats forage in deciduous and coniferous forests, and, during the summer, typically roost singly or in colonies underneath bark or in cavities or crevices of both live trees and snags. They predominantly overwinter in hibernacula that include caves and abandoned mines. As such, actions associated with any of the alternatives would not occur in northern long-eared bat habitat and no effects are expected to occur.

Cumulative impacts include the incremental impacts of future State, or private activities (i.e., excluding federal activities), that are reasonably certain to occur within the action area of the Federal action subject to consultation.

Existing and proposed activities on non-federal lands in the planning area that have the potential to cumulatively affect the species include but are not limited to the following:

- Non-Federal oil and gas and related energy development
- Water depletions from irrigation diversions and dams
- Livestock grazing on private lands
- Existing and proposed wind farms
- Subdivision development
- Recreation
- Coal mine operations
- Transmission lines
- Seismic exploration
- Municipal dump expansions
- Use of anticoagulant rodenticides

Determination of Effects

The alternatives (Alternatives 1, 2, 3 and 4) developed for the 2020 Thunder Basin Plan Amendment would not introduce management activities in northern long-eared bat habitat, and would have *No Effect* on northern long-eared bat. The proposed activities under any of the alternatives would have no effect because proposed activities do not affect caves, mines, deciduous and coniferous forests, wetlands or food sources on which the bat depends.

3 Literature Cited

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